AMENDMENTS TO THE SPECIFICATION

Please amend page 1, lines 17-23 as follows:

In ~~the latest~~ recent years, steel producers have made an effort in obtaining good methods for creation of foaming slags, as these give several process advantages. A foaming slag will give better insulating properties meaning less heat loss from an electric arc furnace. The ~~refracteries~~ refractories and electrodes are protected from arc radiation which means increased lifetime, and the sound is muffled. The electric arc is ~~stabilised~~ stabilized and it is possible to increase the power input, giving increased productivity. Different slag foaming methods and agents are thus described in the literature.

Please amend the page 1, lines 24-27 as follows:

From US patent No. ~~4 528 035 it~~ 4,528,035 is known a method of foaming the slag generated in a steel making electric arc furnace after melt-down of steel raw material by introducing a foaming agent ~~comprising~~ comprised essentially of calcium oxide (CaO) and free carbon (C) particles when the amount of said slag atop said melted steel is at least 4 inches deep.

Please amend page 2, lines 1-8 as follows:

US patent ~~4 447 265~~ 4,447,265 describes a slag-foaming composition and process for use in electric arc furnace steel-making. The compositions comprise from about 15 to 80 wt% of a carbon source, the remainder consisting substantially of a source of an oxide of calcium; alternatively, the compositions comprise from about 15 to 30 wt% of a carbon source, the remainder consisting substantially of dolomite lime. The process consists of the addition, in the course of steelmaking using an electric arc furnace, of the steelmaking additive compositions of the invention to the charge subsequent to the initial scrap steel melt down.

Please amend page 2, lines 9-12 as follows:

From FR 2 634 787 [[it]] is known a method for the production of a foaming slag by blowing oxygen close to the metal-slag interface and by the addition into the slag of a ~~carbonised~~ carbonized material previously mixed with a carbonate material such as limestone or dolomite.

Please amend page 2, lines 13-15 as follows:

From JP08041521 [[it]] is known that foaming of a slag in a ladle can be achieved by adding lime nitrogen having C source (CaCN) from above the melt thereby causing the slag volume to increase in such a way that deslagging of the ladle is more efficient.

Please amend page 2, lines 16-25 as follows:

Stainless steel slags are difficult to foam and it has only recently been ~~able~~ possible to develop reliable methods for creating foaming slags in the arc furnace. Such a method is described in Masucci, P., Capodilupo, D., Brasculgi,G. (1993), "Foaming slags for stainless steel smelting in the electric arc furnace," Electric Furnace Proceedings, pp 289-24. Limestone, $CaCO_3$, and coke have been added to give foaming. Special ovules have been used to promote a closer contact between limestone and coke. These are composed of a mix of limestone and metallurgical coke (with a C content of 87%) with grains measuring 0.5 to 1 mm and bound with starch. The ratio of graphite and limestone is 50/50. Slag foaming was achieved by blowing large quantities of oxygen and adding limestone-coke ovules.

Please amend pages 2, line 26 to page 3, line 2 as follows:

For current slag foaming processes for stainless steel-making, the composition range of the slag has to be very narrow in order to achieve proper foaming. Another disadvantage is that an unacceptable amount of the alloying element Cr is ~~oxidised~~ oxidized to Cr_2O_3 and lost in the slag, ref., M. Görnetup, Doctoral Thesis "Studies of Slag Metallurgy in stainless Steelmaking", ISBN 91-7170-205-9 (1997).

Please amend page 4, lines 15-22 as follows:

Use of calcium nitrate as an agent for producing a foaming slag in the electric arc will serve the triple objective of adding lime to increase the basicity of the slag (for removal of P and S), supplying gaseous components N_2 and H_20 to promote foaming and O_2 for the reaction with the injected carbon, giving CO which also promotes foaming. The calcium nitrate, mixed with carbon, could be added through chutes or injected by a gas or air into the slag through a lance. The calcium nitrate may be used with or without various amounts of ~~crystal~~ water of crystallization, i.e. $Ca(NO_3)_2(H_2O)_x$ (where x = 0-3). Various small amounts of other elements may also be present, e.g. ammonium etc.

Please amend page 5, lines 9-13 as follows:

For stainless steels ~~one~~, it has only recently been ~~able~~ possible to develop reliable methods for creating a proper foaming slag in arc furnaces. The reason seems to be some subtle effects caused by the Cr_2O_3 content of the slag. The Cr_2O_3 has a low solubility in electric arc furnace slags and some of it remains as a solid second phase. This chromium oxide reacts very slowly with carbon to give CO and to recover the Cr.

Please amend page 6, lines 18-25 as follows:

Example

Demonstration tests have been carried out. About 1.5 kg of stainless steel type AISI 302 was melted in a crucible by a gas flame. After melting, about 0.3 kg calcium nitrate, Nitcal®, was poured on top of the melt. The high temperature of the melt and crucible caused the calcium nitrate to melt, decompose and react by evolving gases which bubbled out of the molten calcium nitrate and created a foam. The decomposition ~~periode~~ period took about 2 minutes after the calcium nitrate had been added, and converted the calcium nitrate to a foamy substance with about 2-3 times volume increase.

Please amend page 7, lines 1-12 as follows:

Full scale testing of Nitcal® in an EAF with the purpose to observe the ~~behaviour~~ behavior and foaming potential of Nitcal® has been conducted. Up to 300 kg Nitcal® per melt (3,5 kg Nitcal/ton steel) was injected by air into the melt simultaneously with separate carbon injection. No dramatic reactions occurred despite the crystal water content in Nitcal®. The tests showed that Nitcal® is easy to handle and inject into the melt of an EAF by simple and standard injection equipment. Gas evolution and reaction with C was observed. Injection by air will give ~~oxidising~~ oxidizing conditions that will increase the level of Cr_2O_3 in the slag. Injection of Nitcal® together with C in such a way that the oxygen in Nitcal® reacts with C to CO does not increase the NOx level from the EAF. The result of the tests in the EAF showed that Nitcal® should be injected into the melt by nitrogen together with sufficient amount of carbon (1 kg Nitcal® requires 0,3 kg C) in order to achieve reducing conditions and reduced loss of Cr to the slag.

Please amend page 7, lines 12-15 as follows:

The total foam ~~hight that is wanted~~ height desired, may be achieved by adding various amounts of calcium nitrate. Compared to current practice, about 10 kg of calcium nitrate per ton steel charge must be added in order to achieve the same amount of gas evolution as typical for current practices.

Please insert the abstract attached on a separate page.